How Books Were Made in the Middle Ages. It will be remembered that some time ago Mr. GEORGE HAVEN PUTNAM, in a book called Authors and Their Public in Ancient Times," explained the machinery by which books were produced and distributed in the Greek and Roman world. In a new work, Books and Their Makers During the Middle Ages (Putnams), of which the first volume is now published, we have from the same author s study of the conditions of the produc distribution of literature the fall of the Roman empire to the close of the seventeenth century. The volume before us ostensibly covers the period from 476 to 1600, but a good deal of the material relating to the sixteenth century is reserved for the concluding installment of the work. The subject, so far as it is at present treated, falls naturally under three heads, corresponding to the three agencies employed in the multiplication of the books due. ing mediaval times. The first agency was suped by the scribes of the Roman Catholic Church. The scriptoria of the monasteries rendered the service formerly given by the copyists of the Roman book shops or of Roman country houses, while their armaria. or book chests, filled, to some extent, the place of the destroyed or scattered libraries of Roman cities or Roman villas. Upon this agency depended the existence of literature during the seven centuries between the fall of the Roman empire in the west and the beginning of the work of the universities; for many years, moreover, after the foundation of the universities of Bologna and of Paris, the book production of the monasteries continued to be of material utility for the preservation of literature. A separate chapter is devoted to the methods whereby the text books required for the universities were produced and disseminated, and in connection with this topic are presented sketches of the more noteworthy manuscript dealers who, for a couple of centuries before the invention of printing, carried on the business of supplying books to the increasing circles of readers outside of the universities. The remainder of this volume is allotted to an account of the revolution wrought by the invention of printing in the of distributing intellectual products. and here we find described in some detail the services rendered to scholarship and literature by some of the earlier printers and publishers of

п. In a discussion of the work of the scriptorium, Mr. Putnam indicates that the volume of pro duction as regards certain compositions was much greater than is commonly supposed. He concurs with Mr. S. R. Maitland, who, in his "Dark Ages," also made an investigation of the subject, in believing that, although the power of multiplication of literary products was, of course immeasurably below that which now exists, and while the entire book production of the two periods may not be compared, yet, as regards those books which in medieval times were considered as the standard works in sacred literature and in the approved secular literature, the difference was not so extreme as is generally supposed. To emphasize his point, Maitland inquired what proportion the copies of Augustine's "City of God" and of Gregore's "Morals," printed between the years 1700 and 1800, lear to those written between the year 1100 and 1200. Mr. Putnam is inclined to hold with Maitland that with books such as those just named as typical examples, the manuscript production during the centuries selected probably exceeded the number of copies turned out by the printing presses during the eighteenth century. The opinion is based upon the fact that, for a term of six or seven centuries, writing was at once a business and a religious duty, an occupation taken up by choice and pursued with a degree of zeal, persistence, and enthusiasm to

which, in the present day, there is no parallel. On pages 133-177, the author of this volume has collected a great deal of information concorning the size and character of the libraries of the monasteries, and also of the university and public libraries in the manuscript period. Among the earlier monasteries whose collections of book were deemed remarkable, and whose literary exchanges were sufficiently important to be de scribed as constituting a publishing or bookselling trade, the following are mentioned: Wearmonth and Yarrow, the book production of which was active as early as the seventh century; St. Josse-sur-Mer, where, in the ninth sentury, the Abbot is reported to have kept a depot of books from which he carried on an active trade with England; Bobbio in bardy, the literary treasures of which have brary; the Monastery of Pomposa, near Rawas said to be finer than any other of its day in h rivalled that of Pomposa Novale library in which at the time of the destruction of the Abbey by the Saracens in 905 is reported to have contained no less than 6,500 volumes; and Monte Cassino, which, under the Abbot Didia, friend of Gregory VII., possessed a very rich collection. Among others pamed are Fulda whose manuscript library at one time surpassed every other in Germany, with, perhaps, the exception of that of St. Gall; and Croyland, the Hbrary of which, in the eleventh century, num bered 3,000 volumes. In addition to these great monastery collections, there were libraries of greater or less importance in nearly all the cathedrals, and in not a few of the castles.

XI. Mabillon is of opinion that the prices of books during the middle ages have been very much overestimated, the impression as such prices having been largely based upon isolated and misunderstood instances It is true that Robertson speaks of a collection of homilies having been bought in 1056 by a Countess of Arizon for two nundred sheep, a measure of wheat, one of millet, one of rye, several marten skins, and four pounds of silver, but Robertson omits to add that the volumes so purchased were exceptionally beautiful specimens of caligraphy, painting, and carving Maitland has pointed out that it would be as reasonable to quote as examples of cur t prices in the nineteenth century the exorbitant sums paid at special sales by the biblic maniacs of to-day. Maitland also directs attention to a very important detail which might serve to give some individual manuscript a value which, when afterward referred to, would appear disproportionate to the expense of the hand labor required for its preparation. Under the process of the multiplication of books by printing, each copy of a given edition must, of course, be a fac-simile of all the other copies, sharing their measure of correctness, and also sharing their blunders. In the manuscript period, however, every copy of a work was, of necessity, unique, and the correctness of a particular codex which was assigned for reproduction was no guarantee of the quality of those manuscripts which had been copied directly from it. In other words, the correctness of every single copy could be ascertained only by minute and aborious collation. If a manuscript had received such a collation at the hands of trustworthy scholars, and had been shown to present a text of such completeness and accuracy as might safely be made the model for future transcripts, such a manuscript would unfact mentioned by Mr. Putnam that there was an early appreciation on he part of some monastery scholars of the Prior of tiorlestone put indexes to all the books in his library. From an ination of the catalogues of various ecclesiastical libraries, it appears that the proportion of the works contained under the main subheadings was approximately as follows: Divin-

Lat us glance now at some of the facts set

ity, 175; scholastic literature, 89; epistles and controversial literature, 65; history, 54; blog-

31; philosophy, 13, and law, 3. This classifica

tion does not give any separate heading for alle-

gory, although this was a subject in which not a

wof the cartier monkish writers were deeply

raphy. 32; arts, mathematics, and

Interested.

tenbach speaks of the collection in Verons in most important of those repertories in Italy in which old manuscripts have been preserved to the present day. Next in importance among the older collections he mentions that of Hexham in England, which had been originally brought together in the year 700, and which is referred to by Bede, With this should be classed the library of York, which is first described by Alcuin. The Imperial library of Constantinople contained no fewer than 120,000 volumes when, under the Emperor Basiliscus, it was destroyed by fire. It was afterward reconstituted by the Emperor Zeno. References are found to this library in 1270, and again, early in the fourteenth century, when John Palæologus was able to present from it certain manuscripts (probably duplicates) to a manuscript dealer in Venice. Mr. Putnam deems it probable that the manuscripts in this imperial collection had been, to some extent, scattered before the fall of Constantinople in 1453. Such manuscripts as escaped destruction during the confusion attending the slege and capture of the city by the Turks were hidden away by scholars in various monasteries and out-of-the-way corners, from which they were brought out by degrees during the following two or three cen-

purchase of books, were occasionally bequeathed in trust to ecclesiastical authorities with the express purpose of providing a library for the use of the general public. Thus, in 1244, the Prior of Vercelli left his books to the Domin icans of St. Paul on condition that they should be placed at the disposal of any scholars desiring to use them. Petrarch's library was bequeathed in 1362 to the Church of St. Mark in Venice with the stipulation that the general public should have access to it. The books, however, were neglected, and for some time disappeared, and it was only in 1635 that a part of them were recovered. The famous library of St. Mark dates from 1468, when Car dinal Bessarion presented to the city 800 manuscripts for the use of any qualified citizens. To Florence belongs the credit of instituting the largest of the earlier public libraries of Italy. The Library of the Vatican passed through vacious vicissitudes, but, under Pope Nicholas V. (1447-1455), it became one of the most important repositories of manuscripts in the world. Frederick, Duke of Urbino is reported to have spent as much as \$0,000 ducats on his collection, which eventually (in 1657) was transferred to the Vatican. King Matthias Corvinus brought together a very valuable collection of books in Ofen, many of which, after his death, came into the possession of the Emperor Maximilian, who made them the foundation of the court library at Vienna. Among the early public libraries in France is specified that of Louis IX. which was opened for the use of scholars, but was limited almost entirely to devotional writings. In the middle of the thirteenth century the chancellor of the cathedral of Amiens in stituted a public library, and composed a guide

for the same. IV. According to Savigny, there were, before the introduction of the printing press, no university libraries in Italy. The so-called stationarii provided both teachers and students with manuscript copies of such books as were prescribed in the courses of study. In Paris, on the other hand, a collection of books for the use of students in theology was instituted as early as 1270, the benefactor being an Archdeacon of Canterbury. The library of the College of the Sorbonne was started in 1289 for the benefit of instructors and students, and the catalogue of its collection prepared in the following year, still in existence, contains 1,017 which titles. In 1345 Richard de Bury, Bishop of Durham, who had been a friend of Petrarch's, bequeathed a large number of man-

uscripts to Durham College in Oxford, which had been founded by himself. This college was discontinued by Henry VIII., and the books were scattered, not even the catalogue having been preserved. The earliest university library in Germany was that of the College Carolinum in Prague, instituted by Charles IV. The next in date seems to have been that of Heldelberg, where, as early as 1386, the Faculty of Arts had a library for itself, in addition to the general collection belonging to the university. The university library in Vienna dates from 1415. and that in Erfurt from 1433. The town library in Leipzig had for its origin a collection possessed by the Augustinian monks, which collection was thrown open to the public in 1445. As early as 1469 there was n Hamburg a collection of medical books, and, the library of which, collected in 1003, in 1480, a burgomaster left a considerable legacy for the foundation of a city library. In Italy; La Chiusa, the accumulation of books, &c., Frankfort, the library of the Carmelite moncity. In addition to the university and public libraries, collections were made by individuals for the most part princes and nobles. Paillip Duke of Burgundy, had a great library, and ar inventory of the collection made by Anne of Brittany, the wife of King Charles VIII., and later of Louis XII., gives the titles of 1,140 books.

In a chapter on the book trade in medieval times, Mr. Putnam shows that, toward the close of the manuscript period, the labor of the seribes was by no means exclusively devoted to works intended to be prized as examples of caligraphy and illumination. From the shops of the ordinary penmen were produced considrable quantities of text-books, books of wor ship, cookery books, astrological treatises, almanacs, and even political tracts. Before the middle of the fitteenth century there are records of licensed scribes carrying on a general business for the public in Cologne, Frankfort Augsburg, Vienna, and even in smaller towns such as Nordlingen. The scribes of the univer sities, who were included among the university officials and who in securing certain academics privileges, subjected themselves also to a series of restrictions, were not in a position to leav their university towns to seek customers in other centres of population. For a long tip they were not permitted to do any work outside of providing the required copies of the author ized text books. On the other hand, the scribes who were not associated with any official were free to carry their work from place to place. to supply the demand dependent upon the markets, the fairs, and other special business conditions. The shops of these town scribes were, as a rule, in the open spaces, particu early in the market place, or in the neighborhood of the Town Hall, or under the shadow of the cathedral or principal church. Where the bustness was not considerable enough to warrant ; shop, it was carried on under the steps or in the perches of the church or the cathedral. It ap pears that, toward the middle of the sixteenth century, when the work of town scribesin Ger many was well under way, and the character of their commodities come to be known to the common people, the circulation of books was more extensive to an initial busine wide-reach ing in respect of mer in war of the classes of buyers than was the case many other part of Europe

Some interesting figures are given in this chaper with regard to the prices of manuscript books in the later Middle Ages. In 1427 a copy of Livy brought 120 gold guiden, and, in 1470 twenty years after Gutenberg's press began to work, a Plutarch was sold for no less than 800 go'd gulden. In 1460 an illuminated Ribbs brought 500 gold guiden, and a Bible with a plain text 100 crowns. In the same year the Countess of Anjou paid for a copy of the Homilies of Haimon, Bishop of Haiberstadt, 200 sheep, five measures of wheat, and five measures of barley. The National Library in Paris contains two manuscripts of the Hible, Latin and French text, written on parchment, which Firmin Didot appraised as having cost to produce not less than the equivalent of \$2,000 francs. The principal item of the outlay was incurred in the production of the 5,000 designs illuminated in gold and color. On the other hand, the text books chap-books, &c., which, during the fourteenth and fifteenth centuries were prepared for the forth by Mr. Putnam in regard to public and | common folk, were sold at prices that seem very university libraries in medieval times. Wat- low when one considers the large amount of

manual labor required for their production. As the library of the Town Hall as one of the early as 1418, a school ordinance of the town of Bautsen in Saxony fixed the price of an A, B, C book, containing also a paterone groschen; nester, at Dootrinal, at half a mark; and of a Donatus, at 10 groschen. In 1451 a copy of the Corpus Juris was sold in Florence for 14% ducats, the equivalent of 90 marks, whereas, at the end of the fourteenth century, it would have brought 480 marks. In 1467 a copy of the comedies of Terrence, written on 198 folio sheets (paper, however, instead of parchment) was bought in Heidelberg for three gulden. By this time, however, the competition, or the expectation of the competition, of the printing press M. W. H. of manuscript.

A New Life of Agantiz.

Many biographies of Louis Agassiz were published immediately after his death, one of them by his widow. Nearly all of these were too eulogistic. On the other hand, some rather severe strictures have appeared in articles purporting to recount the life of some of his associates, or dealing with special questions of natural history. Undoubtedly, the truth lies between the two, and to set forth the truth is the aim of a new book called Life, Letters, and Works of Louis Agossiz, by Jules Marcou (Macmillans). The author of the two volumes in which this biography is comprised enjoyed the friendship of his subject during almost thirty years, and h the last survivor of the small band of European naturalists who came to America with Agassiz. With a view to the publication of this book, Dr. Marcou has made, he tells us, during the last twenty years, a large collection of material in the form of letters, recollections of friends and ontemporaries, and rare pamphlets, with the design of presenting to the public the man himself, his origin, his character, his public life, his private life, his passions, his weaknesses, his faults, his errors, his genius. The author's admiration of his subject is undisguised, but he has tried to be just not only toward him, but also toward all those who were more or less con nected with him during his scientific life. The author of this biography has a chapter in

the second volume (pages 103-129) on the controversy between Agassiz on the one hand and Asa Gray and other American disciples of Darwin on the other. Dr. Marcou sums up what he has to say upon the subject with the assertion that at present the theory of descent as set forth by Lamarck and Darwin, has not been established by incontestable facts and observations. Agassiz was unwilling to abandon the method of exposition of facts which he had found established in science and to substitute in its place metaphysics and hypotheses; he clung to observation and experiment. Between variations of extinct species and their affinities to each other and to living species on the one hand, and transformism, or the theory of descent from common parents on the other there is a gap, or rather an immense abyes over which Acaesiz was not willing to leap. Evidently a bridge was needed, but natural selection seemed to him too frail a atructure for so dangerous a passage. It is certain that man has not yet found the secret o creating species, although he has the power of destroying them, as he has shown by the extermination of several species of animals. In the pinion of the present biographer the question of mutability of species and of the method of ffecting it is still reserved for future observers and not until we possess indisputable proof of their soundness will the theories of transformism and descent be accepted by scientists

Jean Louis Rodolphe Agassiz was born May 8, 1807, at the parsonage of Motier, on the Lake of Morat, Canton of Fribourg. He died in Cambridge, Mass., Dec. 14, 1873. tion was received at the colleges of Bienne and ausanne and at the universities of Zurich. Heidelberg, and Munich. He had the advantage of knowing Cuvier and Alexander von Humboldt. By the age of 30 he had attained a great reputation by his work in natural history. Before his amforation to the United States chairs had been offered to him at the university of Heidelberg and the academies of Geneva and Lausanne and he had been appointed rector of the Academy of Neuchatel. Official posts at Paris also had been indirectly offered to him, but declined. Prof. Hermann Lebert, the anatomist and naturalist, who knew him well during the twelve years of his greatest scientific activity. from 1834 to 1840 said of him in 1877. "Ac assiz was one of the most brilliant men of his time. Young, handsome, of an athletic constitotion, gifted with a captivating eloquence, his spirit was animated by an insatiable curiosity his memory excellent; his perspicacity rare and very keen, and his way of judging and coordinating facts highly philosophical in its tendency." Referring to some of his physical and moral characteristics, the present biographer recalls that Agassiz was a little above the average height, although not tail. He was squarely built, with broad shoulders and a powerful and well-proportioned body and with remarkably large and, at the same time, wellformed hands, which he always used most, skilfully. They were the hands of an artist or of a naturalist, ready to use the pencil, the hammer, the scalpel, or the microscope. A minor fact worth noting is that his man ner of shaking hands was very cordial and friendly. He stood firmly, his feet were rather small in comparison with his herculean structure, and he seemed formed for walking: indeed, he was all his life a capital pedestrian, both on level ground and among the Alpine mountains. His head is described as magnificent; his forehead was large and well developed; for his brilliant, intelligent, and searching eyes the word fascinating is not too strong; while his mouth and some what voluptuous lips were expressive and in harmony with an aquiline nose and wellshaped chin. His hair was of a chestnut color and rather thin, especially on the top of his head; by the time he was 36 years old he showed signs of baldness, which greatly increased after his fiftleth year. The only part of Agassiz's body which was not in accord with the rest was his short neck, which gave him the appearance of carrying his head on his shoulders, a defect which he possessed in common with Napoleon Bonaparte. The neck was his weak point, and the part which failed first. The blographer tells us that Agassiz was

easily moved to tears, and, at times, cried like a child. He had spells of laughing, which sometimes seemed forced, but which were perfectly spontaneous. It was almost impossible for him to conceal his agreeable emotions but this remark is especially applicable to the first forty years of his life; later, he was less apt to show his feelings. During the first half of his life he was seldom angry, however great the provocation might be. After 1853, however, he sometimes got into a passion. even losing control of his words, although he never ceased to be a gentleman, and was acceful not to wound too deeply his adversary, or the nerson with whom he was conversing. In conpertion with this gradually increasing propensity to less control of words, it may be mentioned that when a post-morror examination was made, traces of disease were found recorded in the brain for a period dating back at least tweive years, On the whole, he was, as one of his most persistent and bitter enemies said, "un bou cufant," a good natured fellow. During his couth and student life, and even as late as his "sejours" at the "Hotel des Neuchatelois," he used to sing, and even to yodel like the Tyrolese peasants and the Oberland guides: but he ceased to do this as soon as he landed on American soil. It seems that fine clothes never attracted him. He was, on the contrary, rather inclined to wear the most common and unbecoming suits, and a slouch hat during winter and summer. At Neuchatel, his dress had been most ordinary, notwithstanding the rather formal society in which he moved, and Dr. Marcon does not believe that during his whole stay in America he ever wore a silk hat. In Paris, indeed, during his long visit of 1846, he was obliged to follow the customs of other savants, observed ever since the time of Cuvier and Humboldt, which prescribed the wearing of a conventional costume, namely a black frock coat, white cravat, and high hat, Alexander von Humboldt affected to wear this

garb even when exploring the Ural Moun-

tains and Central Asia, and Leopold von Buchas, as well as Elle de Beaumont, did the same during their geological excursions. The costume did not become Agassiz however, and he was delighted when he arrived in America to find that every one dressed as he pleased, without any ceremony or convention of any sort. He very seldom wore gloves, never car ried a cane except an alpenstock, and very seldom used an umbrella. When in Neuchatel, at official meetings he wore over his coat the ribbon and cross of the Red Eagle of Prussia; but, after leaving Neuchatel, he were no decorative ribbon of any kind, although he possessed that of knight and officer the French Legion of Honor, beside had already begun to affect the market prices | the Prussian order. On the whole, Agassiz was extremely simple in his ways, and did not like to make an appearance different from that of ordinary people in his neighborhoos. Heing a good pedestrian, he used to carry on his back in all his excursions in Switzerland and southern Germany a knapsack of the kind now called see defourists. At Neuchatel one would always be lying in the library at he foot of his desk, with hammers and papers and specimens. He did not bring one with him to America, however, using a carpet bag instead, as rendering him less conspicuous.

> In society Agassiz was fond of meeting rich and influential men, being always desirous o acquaintance with those possessing a great same and in high social or official stations. He was, we are told, an aristocrat by nature, with a strong admixture of popular and democratic habits and manners. He was always ready to listribute large doses of "l'eau bénite des cours," having been at a good school for this purpose with Alexander von Humboldt, who was a perfect courtler. He was not fond, it seems, of the society of other savants, often having occasion to complain of their conceit and curiosity. The biographer says that Agassiz did not know to repulse the too familiar ners and even insolence to which cele brated men are frequently exposed at the hands of their confrères. Poets, literati, historians, philologists, lawyers, and especially merchant princes were more to his taste. Military officers had no attraction for him; on the other hand he was very fond of naval officers and captains of merchant steamship lines. Agassiz was not only a brilliant conversationalist, but he had also the most winning manners; he easily induced those around him to accept and even to share his enthusiasms. If any one resisted, he was not discouraged, but displayed a veritable coquetry in his efforts to conquer. Easily approached, he met you most openly with expressions of frankness mingled with agree able surprises, and brought you to his view or to his side almost before you were aware of it. At the same time he possessed the shrewd simplicity characteristic of the Vandols peasant; in his determination to discover what was at the bottom of your mind, he would lead you to say all, and even more, than you knew and thought. But, presently, you would be obliged to admit that your first impression of the man was erroneous, for you would encounter an insurmountable opposition to anything of which he disapproved. According to the present biographer. Agassiz was very ready to make promises; heasked favors in every direction, and then was apt to forget the conditions under which they were granted. He was, at once, a dreamer and a man of action, dreaming aloud and taking the public into his confidence with regard to everything which came into his mind. He was not to be taken at his own word; it was necessary to allow a large margin for contingenies and changes. When surrounded by material difficulties, he could fortify himself by a remarkable power of always hoping for better times, having an absolutely unshakable confidence in himself.

Dr. Marcou, who knew him as we have said for thirty years, testifies that Agassiz was one of those whose hands and heart are always open To him is applied the sentence of the French author: "He only lived for others, and, had there been nobody to gaze at him all the time. he could not have existed." He never thought that he had enough friends or assistants around him. His home was a sort of phalanstery of savants or would-be savants. We say would-be because he would take for genuine any compliment which flattered some hobby or weak point, and no other explanation can be given of certain blunders. Repeatedly, in the United States, he suffered to escape him very able scientists, retaining, instead, persons whom he well knew were not so considered. As regards his generosity, the biographer bears witness that he helped many with money, and always in an unostentatious way. It is true that he was often deeply in debt, but, as soon as he got money, he distributed it almost lavishly without thinking of the morrow. An anecdote is given to show how full of liberality he was. A Neuchatel merchant established at New York had suffered pecuniary misfortunes, and had become a pauper, perhaps on account of his bad habits. The man had absolutely no claim on Agassiz, who came to Neuchatel several years after the merchant had left that town. latter had kindly received the artist Buckbardt at New York in 1844, and this was claim enough for Agassiz, who ordered an agent to pay fort. nightly to this poor Neuchatelois an allowance sufficient for his support until he died several years after. This occurred during and at the end of the civil war, before any of Agassiz's children became rich.

TIT.

In religion Agassiz was very broad and tolerant, treating everybody's views and convictions with respect. He was opposed to all formalism and exaggeration, and did not like theelogy, but, as far as possible, he avoided all discussion of the subject. He was neither a skep tic nor a scoffer, and Dr. Karl Vogt, with his unceasing skeptical and cynical attacks upon the Hible, shocked him so much that, notwith standing Vogt's great talents as a naturalist, Agassiz was glad when he left Neuchatel. Dr. Marcou says that in his youth and early man hood Agassiz was undoubtedly a materialist, or, to speak more exactly, a skeptle; but, in time and little by little, his studies led him to believe in a divine, creative power. He was more in sympathy with Unitariantsm than with any other Christian denomination. He was married to his second wife by a Unitarian minister, and his funeral service was conducted by another If he generally avoided the society of ministers saw too many of them in his youth.

With regard to his method of working, the assertion of his wife is quoted that Agassiz folowed all his life a unity of plan in his scientific researches. By Karl Vogt, who was associated with him for five years of the most active and scientifically productive part of his life, a contradictory statement was made: "He was wanting in character, being like a piece of wax which retains the mark of the last hand that has held it, and like a weathercock which turns all around the horizon, believing that it has remained motionless, pointing all the time

in the same direction." The present biographer believes that the tenth lies between these views. Agassiz, he says, was capricious in the extreme, very versatile, and easily attracted by any new object or subject; he had the faculty of almost completely for-geiting work half done or only sketched. He lacked persistence and steadiness at work re quiring long and difficult observation. Like a eplendid butterfly, he flow from one delight to another. To compare Agassiz, however, to a weathercock, or a piece of wax, is pronouna great mistake. When his opinion was formed on a subject, it was impossible to move him That something sternly practical, moreover, mingled with his habitual idealism, was proven by his museum. He did not carry out his plan entirely, but, had he lived twenty years longer, his ideal museum would have become a reality. It is, nevertheless, true that he entered upon and abandoned, successively, many subjects, For instance, after the publication of his " Fos sil Fishes" and the "Fishes of the Devonian System," that is to say, after 1884, he never took up the subject again, with the single exception of the study of a few fessil teeth corlected in California and described in 1839. He never returned to the glacier of the Aar after a hurried visit in 1845. Fossil echinofavorite study with him from 1883 to 1845, when he wholly deserted

them. He announced ten volumes of "Contri- the God of the Lake were thrown from the ground, he and his missionary friends began to butlons to the Natural History of the United States," yet only four were published; but for his researches on the Florida corals would never have been issued. Part II. of his "Principles of Zoology" was never published. Notwithstanding these shortcomings, the biographer considers it impossible not to admire his scientific intelligence and not to recognize his scientific force. In Dr. Marcou's opinion, no one was such an able instigator of scientific rescarches. Agassiz exercised a magnetic influence, and he used it constantly, whatever the subject to be investigated might be The two principal passions of this naturalist were teaching and collecting specimens. As a teacher he was unrivailed and unique; from the outset of his student days at Zurich until the last week of his life it may be said that he taught. He was always ready to deliver a lecture. He would withdraw for half an hour at most, sometimes for only ten minutes, and ther would begin on the subject chosen, speaking with an abundance of detil and yet with broad general views and with philosophical conclusions. As regards his passion for collecting specimens and organizing museums, he was insatiable, and is declared to have had a real mania for acquiring and keeping everything; he never rejected any specimen or drawing.

In some final pages, the biographer compares the personality of Louis Agassiz with that of his master, George Cuvier, both of whom have strongly marked the natural history of the middle of the nineteenth century. Both born at the foot of the Jura Mountains, they were descended from families essentially Jurassic and Protestant, which included Protestant ministers. Their youth was passed in countries using the German language; Cuvier's at Stuttgart and Agassiz's at Bienne, Zurich, Heidelberg, and Munich. On both of them German education left indelible marks, more especially during the first half of their scientific life. Cuvier was, above all, a careful observer of fo Agassiz, on the contrary, was inclined to the ze; his brilliant imagination was constantly alert. Cuvier was an excellent practical geologist. Not so Agassiz; his active spirit would not allow him to follow patiently the long, tedious, and often fatiguing researches of practical geology. He wanted the results which he could premptly obtain from the drawers, the shelves, and the glass cases of large collections. There Agassiz had not his equal, being even quicker than Cuvier. Both possessed an extraordinary memory, and both were remarkably gifted with the faculty of order: were capable of persistent application, and, at the same time, both worked with great facility. On the other hand, neither was inventive; they both could observe facts sharply, but neither of them thought of linking facts by theories calculated to conduct to the discovery of other facts. Herein they presented a strong contrast to Lamarck, Darwin, and Huxley, who looked forward to the future, prophesied, and were always ready to call to their help hypotheses and probabilities. Physically, Cuvie; and Agassiz resembled each other in possessing enormous heads and largely developed brains, while neither Lamarck nor Darwin was abnormal as regards size and internal develor ment of the skull. In a crowd Cuvier and Agassiz always attracted attention, and were distinguished at once as uncommonly fine-looking men. Cuvier and Agassiz were both unwilling to regard science and religion as irreconcilable. and, from their education and their connection with Protestantism, did not feel justified in accepting facts which seemed probable only, but which lacked substantial and repeated proofs. Nevertheless, in Dr. Marcou's opinion, neither of them was hypocritical, for both had too great a respect for science to deserve so grave a condemnation. Boue's stricture is quoted in a footnote, but with disapproval. What Boué said was -we translates the French: "Among scientists of renown, Cuvirt is not the only one who preferred hypocrisy to truth, the best known example being that of Agassiz. In order to fortify his position in Massachusetts and to secure the power of founding a superb zoological museum at Cambridge, he passed beneath the Caudine forks of the most absurd Methodistical Protestantism." This is pronounced by the biographer a striking example of misrepresentation and of misunderstanding of the true position of Agassiz in Massachusetts. W. M. H.

The Results of Emancipation in the West

What is manifestly a timely book, in view of the lively interest taken in Venezuela and Cuba. has been published by the Putnams under the name of The West Indies and the Spanish Main, by James Rodway. In the compass of some 360 pages the author has undertaken to compress the story of the islands and maritime ountries indicated by the title since these first occupied by the Spaniards. The adequate treatment of the theme would require a score of volumes, but a clear idea of the principal events is conveyed by the author of this sketch. The most important chapter in the book deals with the economical and social results of the aboli tion of slavery, but the author's introduction ence to the quest for El Dorado, about which there is some current misconception.

Mr. Rodway says in the introduction that "the white colonists in the West Indies never settled down to form the nucleus of a distinct people. Since the emancipation, the islands have been more and more abandoned to the negroos and colored folk, with the results that, although the Government is mostly in the hands of the whites, they are in such a minority as to be almost lost." This is true of all the islands, ex cept Cubs and Porto Rico; in these the colored element of the population is considerably smaller than the white. That is doubtless why the white inhabitants of the islands named have developed a feeling of patriotism which is especially marked in Cuba; elsewhere in the Antilles the future is recognized as belonging to the colored people. On the northern coast of South America, on the other hand, the complete displacement of the original inhabitants by whites and negroes did not occur; consequently, we see there an interesting process in course of accomplishment, the development of two nationalties the Venezuelan and the Colombian. In Hispaniola, also, we may watch a nation in the course of development, but here there are no aboriginal elements; the race is an alien one imported from the Old World. More backward than the aboriginal Americans, the Africans of Hayti are struggling to gain a position among civilized peoples, but thus for without much success. The negro seems to have but little of the native power that makes for progress; he must be compelled by outsiders to move on. Mr. Rodway, however, is not one of those who are inclined to look upon the Haytian negro as in the course of degenerating into the savage; he believes him to be progressing, although slowly. In the islands belonging to European nations, the influence of the outside dominant power is observable in the negro even when he has no trace of white blood. The French, English, or Dutch negro may be recognized, not only by his language, but by his man ners, and even his features. East Indians and Chinese have been imported in considerable numbers, but those remain isolated, and make little impression upon the colored folk.

It should by this time be well known that the word El Dorado is the name not of a city, or of a country, but of a man. It means the gilded The germ of the story arose in New Grauada, and Mr. Rodway might as well have mentioned that it is recounted in the parrative of Padre Simon. Here was the Lake of Guatavita. and before the arrival of the Spaniards this was thescene of an annual religious festival. To the genius of the lake the Cacique of the neighborng district offered a holy sacrifice on a certain In the morning he announted his body with balesin, and then robed blinself in gold dust until he became a "gilded Then, embarking in a canoe with his nobles, he was carried to the centre of the lake, while crowds of people thronged its shores and honored him with songs and the | negro thought little of this competition, but, din of rude instrumental music. Offerings to | when he gradually dropped into the back-

cance, gold, emeralds, pearls, and other precious things being scattered upon the water. Finally the Cacique jumped in himself and washed the gold from his body, while the people shouted for joy. To wind up the festival a great drinkwas held, when canoes full of piwarree, the Indian's beer, was drunk, and every one made merry. This ceremony had been discontinued before the conquest of Peru, but the tradition of it had so impressed itself over the porthern shores of outh America as to be told from the Amazon to the 1sthmus of Darien. In the embellished myth, the Cacique was gilded not once a year. but every morning, and the city was full of beautiful golden palaces. It was gradually moved, moreover, by legend, from New Granada a long way eastward, and was placed on the edge of a great south lake called Parima, the sands of which were said to be composed of the yellow metal. The whole of the Spanish Main was explored in the quest of El Dorado, and places were visited in the course of it, during the sixteenth century, which have scarcely again by white men down to the present day.

HII. The author of this book concurs with all first

hand observers in regarding the emancipation of the slaves as a terrible blow to the West Indies, and one from which the islands have not yet recovered. The planters looked upon it as a second attempt to ruin them, the first having been the abolition of the slave trade. That West Indian slavery had a bright side as well for the slave as for the planter seems to be manifest from the fact that, while there was slavery there was no poverty; there were no tramps or beggars. The owner of a plantation had to feed his people in sickness as well as in health, in childhood and in old age. As indiscriminate manumissions were forbidden in most of the colonies, sick and broken down people could not be cast adrift to become burdens upon the community. Even at the present time one sometime hears an old woman complain that, if slavery still existed, she would not be half starved, as she is to-day. It is further to be noted that magistrates, policemen, and jails were almost unknown; the planter might give the negro a slight flogging now and then, but, as a rule, this completed the tale of his misdemeaners. Of course, a bad master might be cruel, as a bad husband may be, but we do not condemn marriage on account of its abuses. The party in England, that brought emancipa tion about, expected to see their protégés become a contented, hard-working peasantry, in place of driven cattle, as they called them. The planters, on the contrary, were convinced, and the event has shown them to be right, that, as freemen, the negroes would not work, and that, without a labor supply, their estates would cease to be productive. The British taxpayer grumbled at having to pay one hundred million dollars to the slave owners, but the latter were far from compensated by the indemnity. With the loss of their human chattels, the plantations in many cases became utterly valueless; for the negroes congregated around certain centres, leaving most of the outlying places without enough denizens to keep up the cultivation. As for the compensation money, this, in many cases, went toward paving off mortgages and other claims, the which saw the impending ruin and hastened to save themselves as far as possible. But it did not suffice even for that, inasmuch as many plantations were subject to liens amounting to half the appraised value of the land, buildings, and slaves. When the last-named security was gone, the others be came worthless, and, as no one cared to advance money on such assets, the nominal owners could not even borrow enough to pay wages. A plantation valued at \$300,000 a few years before the emancipation, and easily mortgageable for half that amount, received \$80,000 for compensation with which it paid off a mortgagee, and then lacked cash for the cost of cultivation. Banks were established, but only solvent estates could get help from them, and consequently hundreds were abandoned in the larger colonies. and hardly any, with the exception of those in Barbadoes, could produce as much sugar as formerly. West Indian nabobs who had been getting their ten thousand a year, and living in England, went out to see what could be done. They found their in-comes entirely gone, and with them all hope for the future. Women and children lost their only means of support, and ruin fell, Mr. Rodway says on hundreds, but he might as truly have said on thousands, of families in England, as well as in the West Indies. Naturaily, the downfall of the estate owners and their relations affected merchants as well. Old established firms were shaken to their foundations, and many became bankrupt to bring suffering to the homes of English ped had scarcely heard anything of the sugar colonies beyond the invectives of the Anti-Slavery Many who had been strong advocates of emancipation now wished that they had never said anything about it, but the die was cast. The negroes would not work, and there was no means of forcing them to do so, The Anti-Slavery party still had their delegates in the West Indies to see that the "poor negro" was not oppressed in any way, and their repre-sentatives in Parliament called the Government to account if they allowed any vagrancy laws or even the shadow of a coercive measure in the colonies. One ordinance after another for this purpose was disallowed, until every planter was

put them in good humor, but, as these made negroes independent of wages the privilege was abused. The blacks would take everything, and do nothing in return. Some of the negroes went so far as to say that the King had promised that their late masters should supply them as usual, without regard to the amount of work they did. This pretension made the planters sore. What with one trouble and another the few who survived the wreck hardly knew how to act. The negro was master, and he knew it. So much depended on him that he was entices to labor by higher wages and greater privileges until the bidding of one planter against another produced the very result which t was intended to avoid. Then a reactionary ourse was taken. First, the allowances of those who would not work were stopped. Then their ouses and provision grounds were taken away.

As the retention of their laborers was a

matter of life or death, some of the estate

owners continued the old slave allowances to

Thou-ands of fruit trees were destroyed to precent the blacks from living on mangoes and bananas during the season. Next, the planters attempted to combine to bring wages to a pay ing level, and this led to strikes on the part of the negroes. Everything tended to further estrangement, until employer and laborer drifted far apart. In British Guiana, the negroebought some of the abandoned plantations and established villages; in some cases they even attempted to carry them on as sugar estates, But, as all wanted to be masters, they, in every case, failed.

Eventually, most of the plantations fell into the hands of these who had liens unon them, and they, not liking to lose their money altogether, began the uphill work of again bringing them into cultivation. They set to work to obtain laborers from other parts of the world. At first they thought of Africa, but the Anti-Slavery party would not hear of immigration from the Dark Continent, for fear of abuses. Then India was tried, with the result that a few coolies were brought over by private persons, catably to Demarara by John Gladstone. But a min the ery of slavery went forth, due to the managers leaving the newcomers in the hands of their head men or strday. It was charged against the strdars that they beat their underlings, and, of course, the planters had to hear the respons bility. The result was that East Indian inputgration was prohibited for a time. After a hard struggle, however, on the part of the planters, it was renewed, and, in the end, prevented Trinidad and British tiniana from being entirely abandoned. Besides Hindus conties, Chinese were also imported, as well as Maltese, Madeirans, and a few Germans. At first, the

protest against it. They said, and it was the truth, that there was enough labor in the colonies to carry on the estates. The difficulty was that it could not be depended on, and the wages demanded by the norroes were entirely beyond the means of the planters. The price of sugar would not admit of them. Cheap labor was the condition of continuing the struggle, and it is owing to the East Indians that British Gulana and Trinidae have recovered from the brink of ruin, Jamaica, the most important of the British colonies in the West Indies, suffered the nont, as she got but few immigrants, and it is only during the last decade that she has begun to hold up her head. In Barbators, on the contrary, the population was so dense that the freedman had either to work or to starve. There were no waste lands and few absentee proprietors. Nor were any of the estates abandoned. Labor was, therefore, pientiful and cheap; consequently, the island soon recovered from the check and went on prospering. The struggle for existence has made the Barbadian negro the most industrious of his race in the West Indies. Not only is he this, but, like his former master, he is inis he this, but, like his former master, he is intensely loyal to Great Britain and "Little Eresland," as Barbadoes is called, Ai the black,
colored, and white people in the other islands
call themselves erected, but he is "neither Crab
(Carib) nor creole, but true Barbadian born,"
to the French, Danish, and Duten colonies
labor laws were enforced after emancipation,
and generally with good results. These islands
felt the change, but not to such an extent as did
their neighbors, and they recovered sooner.

A GROST IN A LUMBER CAMP. It Was Worth \$26 to Job Remick, and \$40

More Is Still in Sight.

OTIS, Me., April 11 .- Job Remick of this town claims to be the only man who ever slept by the side of a bear all winter without knowing it. Job is a farmer-lumberman, who took a crew of choppers to the headwaters of Union River last December for the purpose of getting out spool stuff for the Eddington factory. As they expected to stay several months, a good camp had be put up as cheaply and quickly as possible. The site which Job selected filled every condition. The camp was placed at the foot of a steep, stony ledge, with logs to form three sides of the structure, while the fourth side was of rock, which served the double purpose of chimney and wind-proof wall. Job, who combined the duties of cook and camp boss in one person, and was obliged to get up early and go to bed late, made a little bunk for himself next to the ledge. while the men slept in a common field bed at one side of the camp.

It was not long before the cracks between the logs and a big seam in the rock were chinked with mud and moss and the winter's work was started in earnest. Strict camp discipline was

logs and a big seam in the rock were chinked with mud and moss and the winter's work was started in earnest. Strict camp discipline was enforced. The cooks and teamsters were up at 4 o'clock. Every mo.ning at 5:30 breakfast was ready, and at 6 all started for the woods, where they worked, with half an hour's rest for dinner, until dark, when they took supper in camp, played seven-up until Po'clock, and went to roost in the hemlocks.

The last thing Job did every night before pulling in the latchstring was to fill the fireplace with hard-wood logs, which kept the camp warm until morning. It took a week or two to get the frost out of the ledge at the back of the camp, and when the stones had ceased to "sweat" the men began to hear strange noises, like a giant meaning in pain, which seemed to come from the recesses of the ledge. These sounds, which started after the big fire was put on at hight and ceased before anylight, and were nearly the fire when the men were up and about, were at first thought to be due to gases or water penned up in crevices of the ledge; but as the winter advanced and the groans grew to snarls of protest—like the talk of a sick Norwegian who is trying to swear in English the choppers came to the conclusion that the camp was haunted, and began to rehearse the names of their fellow townsmen who had been murdered or died from violence. After an impartial canvass and a careful comparison of voices it was decided that the groaning ghost was the spirit of old fra Sprague, who had wandered to these hills three years before after bears and had never come back to tell how he fared. As soon as the author of the noises was named every chopper and teamster quit work, leaving Job and the goldin to keep camp. New men were hired from an employment agency in larger, and though Job tried to explain the groans by saying they were due to frost in the hills, the secret was soon common talk, and again the camp was employ of everytooly but Job and the chost.

Adopting the homeopathic idea that like cure like, a

\$15 pelt on her back and a \$5 State bounty or

stood revealed as a full grown she bear, with a \$15 pelt on her back and a \$5 State bounty on her ears.

The choppers and teamsters, aroused by the noise, came on with axes, pocket knives, and clubs to despatch her at once; but Job, warning them to go easy, threw a blanket over her head, and then all grappling in with bedding and coats for fenders, she was soon tied fast, with a nuzzle on her nose and rope handcuffs on all her legs. Using sticks for crowbars they dug out the loose dirt and stones and uncovered a grass-lined den as big as a hogshead, which contained two young cubs. In spite of stamping, snorting, and other protests from the horses, the bear family were moved to the hay loft in the hovel, where they were fed until the cubs could run about. Then, just before they broke camp, the mother was killed to furnish meat for the crew, and the young bears were carried to Job's home, where they are now growing fut and saucy on breal and milk. Hesides the meat, which he fed out in camp, the old bear yielded Job's is for her pelt, Si in bear's grease, and \$5 in tounity, and he still has the cubs, which he values at \$20 cash. In addition to a cash consolation, Job has the perpetual laugh on all the men who were scarced away, and is constantly hunting ghosts. hunting ghosts.

AT THE AQUARIUM.

A Little Surprise for a Man Not Familiar with Builfrog Characteristics.

A nearsighted stranger, who saw a bullfrog standing on its hind legs and resting its fore feet against the glass front of one of the tanks in the Aquarium, stopped to look at it. It was a big bullfrog, one that would measure about a foot extended, and it stood there as motionless as an image, except for the slight but regular

as an image, except for the slight but regular movement that respiration imparted to its expansive throat.

The stranger was not an expert in frogs, but he could see that this was a fine builfrog. It looked as though it had been standing there for a month, and was going to stand there in just that attitude till next Fourth of July, and he was interested. He drew nearer to examine it, it is hat brim touched the front of the tank, and he took his hat off so that he could get closer to the glass.

His hat brim touched the front of the tank, and he took his hat off so that he could get closer to the class.

The saw the broad, flat top of the bullfrog's head just above the surface of the water, with the eyes projecting like dormer windows. Just below the water he saw he frog's great mouth rounting around so far that he almost wandered, as many people had wondered before, whether the top of the frog's head wasn't held on by a hinge at the back. He counted the toes on the frog's fore feet, which rested against the glass, and found that they numbered four each, bessending to the leas, which rested on the buttom, he had just discovered that one foot, had live toes, while the other had only four, when suddenly the tank seemed full of huiffrogs flying and tumbling in all directions at once, for just one moment, and then everything was still again; and anyholy hou an expert in builfrogs, who had seen this builfright his new attitude over on the other side of the tank, northeress as an image, would have thought that it had been standing there since last autumn, and was going to stand there till next fail, at least.

AN ETANGELIST WITH A MAID. Was the Woman Who Preached in Madi-

son Square Telling Her Own Story ! A new kind of evangelist attracted a crowd in latison square on Easter Sumlay afternoon This one was a woman, and a nice-looking one, ton, of perhaps muddle are. She stood not far from Delmonico's, and exhorted the idlers to be sailed. What attracted the greatest curiosity was that she was accompanied by a maid, a colored woman, who carried her extra wraps no books. The woman told a story of leavence a rich weman, while reding it he carriage posseds a preacher who was exhorted a crowd in the street. She stopped from the carriage to lister to him and was enterted. Thereupon she gave up her carriage, her his clother, and her line house, and devoted horself to saving others. When the crowd heard the story they looked at the colored mand and wondered if the evangelist was telling her own story.

gelist was telling her own story.